

Age and Growth of Northern Pike (*Esox lucius*) and Muskellunge (*Esox masquinongy*)  
in Sturgeon Bay, 1988

by  
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## INTRODUCTION

Biological information on northern pike and muskies in the waters of Sturgeon Bay is scarce. Northern pike are native and self-sustaining while muskies, once native, have been stocked, when available, through the Musky Alliance Club of Wisconsin since 1977 (Table 1). In 1988, in an effort to fill this data void, northern pike and muskies caught in fyke nets set for walleyes in the Sturgeon Bay area were measured, tagged, sexed, and were sampled for scales.

## METHODS

Fyke nets were set from April 13 through May 5 on known walleye spawning areas and areas of walleye concentrations (Figure 1). Lengths on all gamefish were measured to the nearest millimeter. Sex was determined visually or by gently applying pressure from abdomen to vent to extract eggs, milt, or determine hardness of females. All northern pike and muskies were tagged with green floy tags. Scales were taken from all northern pike and all but two muskies at approximately the halfway point between the lateral line and anterior base of the dorsal fin. Becker (1983) and Carlander (1969) were used as aides in scale reading to lessen the degree of difficulty in aging northern pike. Except for four fish less than 340mm, all northern pike sexed as unknowns were assumed to be females. When measuring and sexing northern pike it is easy to tell males because of milt present, therefore it seemed reasonable to assume the unknowns were females since males are ripe for almost the entire spring.

## RESULTS

### Age and Growth

A total of 117 northern pike were measured and scale sampled. Ages ranged from 2-8 with one ten year old (Table 2). The dominant age was 4 for males and 6 for females. The overall sex ratio for northern pike sampled was 42% males to 58% females. Nets nine and ten near the boat landing in Potawatomi State Park at the mouth of Sawyer Harbor accounted for 46 (39%) of the 117 northern pike.

The females were faster growing and possibly longer lived than males because males did not show up as frequently as

females in ages five through ten. The growth has dropped compared to a study 48 years ago (Van Engel 1940) but was ahead of northern Wisconsin (Snow 1969) (Table 3).

A total of 16 muskies were measured and tagged with scale samples taken from 14. Muskies were represented by ages five and six. The five year olds averaged 812mm and ranged from 734mm to 868 mm whereas the six year olds averaged 867mm and ranged from 786mm to 930mm. Nets nine and ten accounted for 12 of the 16 muskies caught.

The two age classes caught were faster growing than five and six year old muskies of the NCD in Wisconsin according to the DNR Fish Management Reference Book. Muskies from the NCD were found to be 716mm and 792 respectively for these age classes.

#### Tag Returns

Of the 117 northern pike that were floy tagged in 1988, three pike were recaptured by anglers by March 1, 1989. Two were tagged in Sawyer Harbor and recaptured at the Stone Quarry at the mouth of Sturgeon Bay and Squaw Island in Little Sturgeon. The other was tagged at the Quarter Deck Marina and caught in the Sturgeon Bay canal. These tags were hand delivered or as in one case reported on a charter fishing report. Tag returns may have been low because an old address was used on the floy tag tubes and the postal service may have cancelled delivery on the old address.

#### DISCUSSION

These results are based on northern pike and musky sampled from fyke nets set to capture walleye during spawning. Nets are set before peak walleye spawning and removed when spawning is nearly completed. However, the spawning period for northern pike seems to be spread over a longer time frame than walleye. Conservation wardens observe northern pike running streams that enter the bay when March runoff occurs even before total ice-out, yet ripe fish are still common when walleye spawning is nearly completed in May. Therefore, the northern pike sampled may not be truly representative of the total population. However, until money is available for a separate northern pike and musky study, we will continue to sample these species during walleye assessment.

#### Literature Cited

- Becker, G.C. 1983. Fishes of Wisconsin. The University of Wisconsin Press, Madison, Wisconsin. 1052 pp.
- Carlander, K.D. 1969. Handbook of freshwater fishery biology. Vol. 2. Iowa State Univ. Press, Ames. 431 pp.
- Van Engel, W.A. 1940. The rate of growth of the northern pike, *Esox lucius* Linnaeus, in Wisconsin waters. *Copeia* 1940(3): 177-187.
- Snow, H.A. 1969. Comparative growth of eight species of fish in thirteen northern Wisconsin lakes. Dept. of Nat. Resour. Res. Rep. 46. 23pp.

TABLE 1.

## Summary of Muskellunge Stocking-Sturgeon Bay Area

<u>Year</u>	<u>Number</u>	<u>Size</u>	<u>Location</u>	<u>Date</u>	<u>Comments</u>
1977	1,230	2/lb.	Sturgeon Bay (Sawyer H.)	10/04/77	L.V. - Clip
1979	20,000	588/lb.	Sturgeon Bay (Sawyer H. & at Office)	6/26/79	
	629	63/lb.	Sturgeon Bay	10/23/79	Pellet Fed R.V. Clip
1981	1,300	15/lb.	Sturgeon Bay (Krause's Q.)	7/22/81	R.V. Clip
	700	8/lb.	Sturgeon Bay (Krause's Q.)	10/01/81	
1982	6,000	1000/lb.	Little Sturg. (Squaw Is.)	6/10/82	Musky Alliance
	900	4/lb.	Sturgeon Bay (Hwy Bridge)	9/08/82	R.P. Clip
	28	56/lb.	Sturgeon Bay (Krause's)	9/30/82	L.V. Clip
1983	2,910	22/lb.	Sturgeon Bay (Sawyer H.)	9/19/83	
	1,514	7/lb.	Little Sturg.	10/11/83	
	686	7/lb.	Little Sturg.	10/12/83	
1985	801	5/lb.	Sturgeon Bay (Sawyer H.)	8/28/85	Musky Alliance
	801	5/lb.	Little Sturg. (Squaw Is.)	8/28/85	Musky Alliance
	6,126	35/lb.	Sturgeon Bay (Sawyer H.)	9/19/85	Pellet Fed

Table 2. Mean length (mm) and length ranges by age and sex for northern pike captured in fykes set in Sturgeon Bay, spring 1988.

	AGE								
	2	3	4	5	6	7	8	9	10
MALE									
L	321	536	580	600	664	728	829	-	876
RANGE	304- 336	491- 600	544- 730	530- 688	615- 742	653- 803	829	-	876
N	4 <sup>a</sup>	6	22	11	5	2	1	-	1
FEMALE									
L	-	582	634	784	803	834	925	-	-
RANGE	-	415- 762	486- 775	609- 893	522- 920	638- 1000	900- 955	-	-
N	-	9	10	16	19	8	3	-	-

<sup>a</sup>

Sex unknown

Table 3. Comparison of mean length (mm) at age of northern pike from this study and populations from other areas of Wisconsin. (Sexes combined for all studies).

	AGE									
	1	2	3	4	5	6	7	8	9	10
Present Study	-	327	585	594	706	774	813	901	-	876
St. Bay (Van Engel 1940)	190	429	584	676	752	795	828	-	-	-
N. Wis (Snow 1969)	216	351	442	503	561	612	668	668	-	-

Figure 1. Location of fyke nets set for walleye assessment  
in Sturgeon Bay, spring 1988.

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ON 301 Single aid to navigation  
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 (C) (Accurate location)  
 (A) (Approximate location)